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Taxonomy & Inventories

Updated list of Tersilochinae (Hymenoptera, Ichneumonidae) of Italy

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Abstract

Background

The subfamily Tersilochinae is a small taxon that accounts for about 60 species in Italy. However, the current checklist of the group is incomplete and listed records are often imprecise.

New information

An updated checklist of the Italian Tersilochinae is provided. Three species are new additions to the Italian fauna, while three others are first records for southern Italy. Additionally, *Aneuclis pusilla* Masi, 1933 is reported as a junior synonym of *Aneuclis melanaria* (Holmgren, 1860) **syn. nov**. This update raises the total number of Tersilochinae species in Italy to 77.

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Keywords

Aneuclis, biological control, checklist, Darwin wasps, diversity, parasitoids

Introduction

Tersilochinae is a relatively small subfamily of Darwin wasps (Hymenoptera, Ichneumonidae) comprising around 600 species worldwide, except for Antarctica (Yu et al. 2016, Khalaim 2022). Following the phylogenetic analysis of Quicke et al. (2009), the subfamily was expanded to include members of the subfamily Neorhacodinae and the "microphrudine" genera of the former subfamily Phrudinae (whereas the other Phrudinae were placed in the subfamily Sisyrostolinae). Subsequently, Broad et al. (2018) reinstated Neorhacodinae as a separate subfamily, thus leading to the current definition of the subfamily Tersilochinae (Broad et al. 2018, Bennett et al. 2019). The group comprises small to medium-sized species, most of which act as solitary koinobiont endoparasitoids of Coleoptera larvae (with some exceptions in the genera *Gelanes* Horstmann and *Tersilochus* Holmgren) (Broad et al. 2018).

In Italy, a checklist of all Ichneumonidae dates back to 1995 and reports about 1,850 species, of which about 60 belong to the subfamily Tersilochinae (Scaramozzino 1995). Subsequent studies increased the number of Darwin wasp species known for the country to more than 2,260 (Di Giovanni et al. 2015, Yu et al. 2016, Di Giovanni and Reshchikov 2016, Kostro-Ambroziak and Di Giovanni 2016, Di Giovanni and Riedel 2017, Di Giovanni and Scaramozzino 2019, Korenko and Di Giovanni 2019). However, the actual number of ichneumonids in Italy is likely much higher (Di Giovanni et al. 2015). Indeed, although the 1995 checklist was an ambitious project, which laid the foundations for the current faunal surveys in the Italian territory (Minelli et al. 1993-1995), the necessity to meet the project's established deadline resulted in a reduction of information (Minelli 1996). Furthermore, the limited distribution of the work and its publication in Italian led Yu et al. (2016) to overlook Scaramozzino (1995)'s checklist, resulting in inconsistencies in the reported number of Ichneumonidae species in these two works (Di Giovanni et al. 2015).

In Ichneumonidae, the lack of precise references to the consulted literature and voucher specimens in collections further complicates record verification and tracking of taxonomic and systematic changes that have occurred since the publication of Scaramozzino (1995) 's checklist. Furthermore, the geographical division adopted in the checklist, that basically divides the Italian peninsula into two macro-areas (northern and southern Italy) plus the two largest islands, Sicily and Sardinia, provides an approximate and fragmentary picture of the distribution of the known species in Italy.

Below, an updated list of the Italian Tersilochinae is reported. Through a literature review and new records, distribution data for the Italian species of the group are reported, where possible, based on the 20 administrative regions into which the Italian territory is divided. Three species are new records for the Italian fauna and three species are reported for the

first time in southern Italy. Additionally, the status of *Aneuclis pusilla* Masi, 1933 is clarified, synonymising it with *A. melanaria* (Holmgren, 1860). The present study represents a small step towards filling the gaps in the knowledge of Darwin wasp fauna of Italy, contributing to the development of a more comprehensive checklist of Italian fauna.

Materials and methods

The previous checklist of Italian fauna (Minelli et al. 1993-1995) reported information on species subdividing Italian territory into four geographical areas: North Italy, including Friuli Venezia Giulia (FVG), Veneto (VEN), Trentino-Alto Adige (TAA), Lombardy (LOM), Val d'Aosta (VAO), Piedmont (PIE), Liguria (LIG) and Emilia-Romagna (EMR); South Italy, including Tuscany (TOS), Marche (MAR), Umbria (UMB), Latium (LAZ), Abruzzo (ABR), Molise (MOL), Campania (CAM), Apulia (PUG), Basilicata (BAS) and Calabria (CAL); Sicily (SIC); and Sardinia (SAR). In the present work, species have been reported, where possible, according to the division of Italy into administrative regions. Where the region cannot be traced back, the previous division into North and South Italy or the generic indication "Italy" is used. Misspellings are indicated with [sic] following the incorrect generic or specific epithet. It should be noted that misattributions (i.e. an error in the authorship of a name) are common in ancient literature; we avoided reporting them, except where they contribute to possible confusion between different species.

Since it is beyond the scope of the current contribution, we did not corroborate earlier records by examining the actual specimens reported by previous authors.

Photographs

Pictures of three species newly recorded from Italy were taken using an Olympus OM-D E-M1 digital camera attached to an Olympus SZX10 stereomicroscope and partially focused images were combined using Helicon Focus Pro (ver. 7.6.6) software. Images of the type of *Aneuclis pusilla* Masi, 1933 were taken using a Zeiss Axio Zoom V16 microscope and stacked using Zerene Stacker software ver. 1.04.

List of depositories

- **FDGC** = Filippo Di Giovanni private collection, Siena, Italy
- **MSNGD** = Museo di Storia Naturale Giacomo Doria, Genoa, Italy
- **NHMUK** = The Natural History Museum, London, UK
- **RMNH** = Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands
- **ZISP** = Zoological Institute of Russian Academy of Sciences, St Petersburg, Russia

Treatment of taxa

Morphological terminology follows Broad et al. (2018). For wing veins, the terminology used by Townes (1969) is also given. Species general distribution follows Yu et al. (2016).

Checklist of Italian Tersilochinae

Genus *Allophroides* Horstmann, 1971

Allophroides boops (Gravenhorst, 1829)

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: Italy (Horstmann 1971); North Italy (Scaramozzino 1995); PIE (Gravenhorst 1829, as *Porizon boops* Gravenhorst, 1829; Frilli and Horstmann 1982, as *Ophion italicus* (Gravenhorst, 1829)); LIG (Gravenhorst 1829, as *Porizon italicus* Gravenhorst, 1829); EMR (Zangheri 1969, as *Allophrys boops* (Gravenhorst, 1829)).

Notes: Horstmann (1971) recorded the species for "? Italy (Gravenhorst)", acknowledging uncertainty in the synonymisation of the sole damaged type specimen of *Porizon italicus* Gravenhorst, 1829 in Gravenhorst's collection with this species.

Genus *Aneuclis* Förster, 1869

Aneuclis incidens (Thomson, 1889)

Material

a. country: Italy; countryCode: IT; stateProvince: Campania [CAM]; locality: near Naples; year: 1966; month: 8; day: 22; verbatimEventDate: 22.viii.1966; individualCount: 1; sex: female; recordedBy: J. Osborne; identifiedBy: A. Khalaim; institutionCode: NHMUK; occurrenceID: 4F846C11-4462-534F-BD0E-C7982EDE365D

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995); TAA (Horstmann 1981); South Italy (Scaramozzino 1995, Horstmann 1981); CAM (**new record**).

Aneuclis maritima (Thomson, 1889)

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: EMR (Zangheri 1969).

Aneuclis melanaria (Holmgren, 1860)

Nomenclature:

= *Aneuclis pusilla* Masi, 1933. Holotype (♀): Italy, Tuscany, Capraia. **New synonym.**

Material

Holotype:

a. country: Italy; countryCode: IT; stateProvince: Tuscany [TOS]; locality: Capraia, Porto; verbatimLocality: CAPRAIA Tosc. / Porto; year: 1931; month: 9; verbatimEventDate: IX · 1931; individualCount: 1; sex: female; institutionCode: MSNGD; occurrenceID: 9611EE52-C103-5305-9F37-9736FC2E18F7

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995); PIE (Pagliano 2009); EMR (Zangheri 1969); South Italy (Scaramozzino 1995, also as *Aneuclis pusilla* Masi, 1933); TOS (Masi 1933, as *Aneuclis pusilla* Masi, 1933); LAZ (Pesarini 2009); ABR (Pagliano 2009); SIC (Horstmann 1981, Scaramozzino 1995).

Notes: Original type label for *Aneuclis pusilla* Masi, 1933

Typus // CAPRAIA Tosc. / IX · 1931 Porto / C. Mancini // *Aneuclis* / pusillus / Typus! ♀ Ms. Museo Civico / di Genova

Description of the type of *Aneuclis pusilla* Masi, 1933

Female (Fig. 1). Body length 2.6 mm (without ovipositor); ovipositor 0.8 mm. Fore wing length 2.2 mm.

Head, in dorsal view, gently constricted posterior to eyes, about 0.6× as long as eye width. Clypeus about 2.5× as broad as long, lenticular in frontal view, coriaceous on basal 1/3, polished and without punctures on lower 1/3. Mandible approximately 3.0× as long as basally wide, teeth subequal. Malar space about 1.1× as long as basal mandibular width, coriaceous. Antennal flagellum with 15 flagellomeres. Face, frons, vertex and gena coriaceous and sub-polished.

Fore-wing with vein 2m-cu postfurcal (i.e. second recurrent vein), with bulla occupying more than its upper half; vein 2rs-m obliterated (i.e. first intercubitus); 2r&RS straight (i.e. proximal section of radius), about 1.25× as long as the width of the pterostigma, meeting RS (i.e. distal section of radius) at about 85°; pterostigma broad, subtriangular; RA (i.e. metacarpus) not reaching apex of fore-wing; vein 1cu-a (i.e. nervulus) clearly distal to M&RS (i.e. basal vein) for a distance almost equal to its length; vein 2cu-a (i.e. postnervulus) almost obliterated. Hind-wing with vein CU+cu-a (i.e., nervellus) straight, clearly reclivous.

Legs slender. Hind femur about 4.4× as long as maximum width. Hind tarsal claws not pectinate.

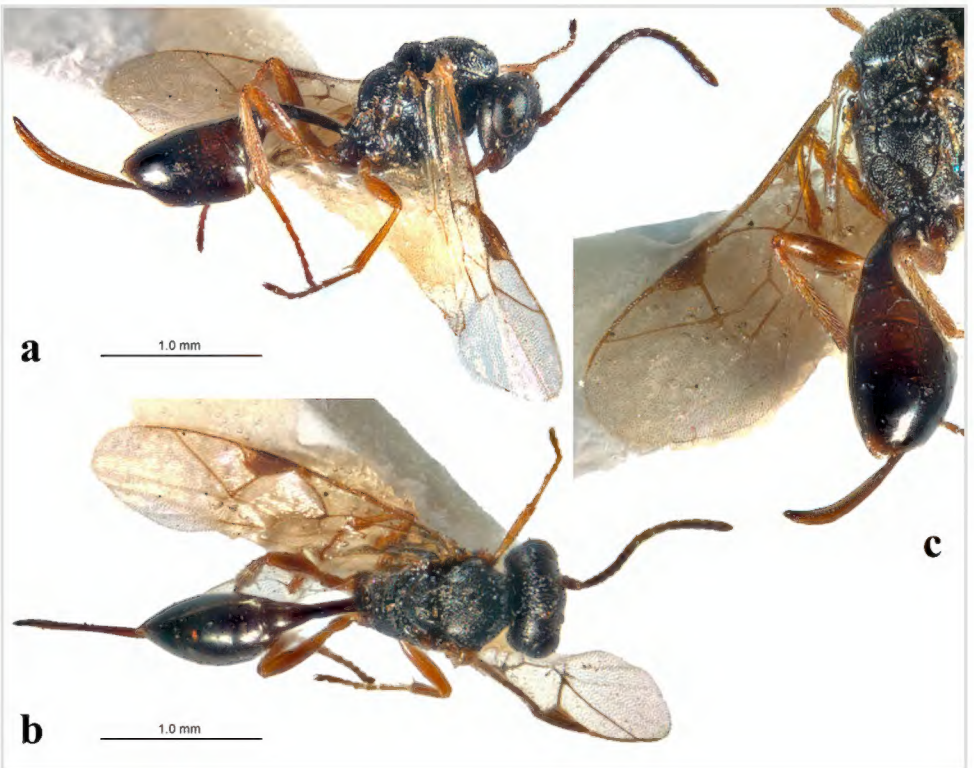

Figure 1. doi

Aneuclis pusilla Masi, 1933, syn. *Aneuclis melanaria* (Holmgren, 1860), syn. nov.; **a-c** female, holotype (MSNGD); **a** habitus, lateral view; **b** habitus, dorsal view; **c** propodeum and metasoma, dorso-lateral view.

First metasomal tergite about 3.0× as long as posteriorly broad, smooth and polished, without punctures; glymma weak, elongated. Second metasomal tergite transverse, about 0.75× as long as posteriorly broad. Thyridial depression elongated, coriaceous. Ovipositor upcurved, sheath about 1.3× as long as hind tibia.

Black. Scapus, pedicel, antennal flagellum basally, clypeus, mandible (except black teeth), palps reddish-brown. Coxae black, legs red, tarsi reddish-brown. Pterostigma yellowish-brown. Sheath brownish-black.

Further Remarks

We have examined the type of *A. pusilla* and found that it is a typical *A. melanaria*. It should be noted that in the original description (Masi 1933), *A. pusilla* was compared with *Aneuclis brevicauda* (Thomson, 1889) and *Probles exilis* (Holmgren, 1860), but not with *A. melanaria*.

Aneuclis pumilus (Holmgren, 1860)

Material

a. country: Italy; countryCode: IT; stateProvince: Lombardy [LOM]; municipality: Mantova; locality: Marmirolo, Bosco della Fontana; verbatimElevation: 25 m; samplingProtocol: Malaise trap on canopy (15.5–17.0 m); year: 2008; month: 9; day: 2-30; verbatimEventDate: 02–30.ix.2008; individualCount: 2; sex: females; recordedBy: M. Bardiani; D. Birtele; identifiedBy: A. Khalaim; institutionCode: FDGC; occurrenceID: F39AF1FE-6FED-54C0-9B93-0F01AF818C67

Distribution: Afrotropical; Australasian; Indomalayan; Nearctic; Neotropical; Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995, as *Sathropterus pumilus* (Holmgren, 1860)); LOM (Khalaim 2004, as *Sathropterus pumilus* (Holmgren, 1860); **new record**); PIE (Pagliano 2009, as *Sathropterus pumilus* (Holmgren, 1860)); EMR (Zangheri 1969, as *Sathropterus pumilus* (Holmgren, 1860)).

Genus *Astrenis* Förster, 1869

Astrenis brunneofacies Vikberg, 2000

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: VEN (Vikberg and Koponen 2000); TAA (Vikberg and Koponen 2000).

Genus *Barycnemis* Förster, 1869

Barycnemis alpina (Strobl, 1901)

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: North Italy (Horstmann 1981, Scaramozzino 1995); TAA (Khalaim 2016, Khalaim 2019).

Barycnemis angustipennis (Holmgren, 1860)

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: North Italy (Horstmann 1981, Scaramozzino 1995); TAA (Smits van Burgst 1914, as *Cratophion angustipennis* (Holmgren, 1860); Smits van Burgst 1918, as *Cratophion angustipennis* (Holmgren, 1860)); VAO (Pagliano 2009); PIE (Pagliano 2009).

Barycnemis bellator (Müller, 1776)

Distribution: Nearctic; Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995).

Barycnemis dissimilis (Gravenhorst, 1829)

Distribution: Indomalayan; Nearctic; Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995); TAA (Khalaim 2016, Khalaim 2019); LOM (Khalaim 2016); PIE (Pagliano 2009); SIC (De Stefani 1895, as *Tersilochus dissimilis* (Gravenhorst, 1829)).

Barycnemis exhaustator (Fabricius, 1798)

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995, as *Barycnemis exhaustor* [sic] (Fabricius, 1798)); TAA (Horstmann 1981, as *Barycnemis exhaustor* [sic] (Fabricius, 1798)).

Barycnemis filicornis (Thomson, 1889)

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: North Italy (Horstmann 1981, Scaramozzino 1995); TAA (Khalaim 2016, Khalaim 2019); LOM (Khalaim 2016); PIE (Pagliano 2009); EMR (Zangheri 1969, as *Leptopygus filicornis* (Thomson, 1889)).

Barycnemis gravipes (Gravenhorst, 1829)

Distribution: Nearctic; Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995); TAA (Cobelli 1899, as *Porizon hostilis* Gravenhorst, 1829); PIE (Frilli and Horstmann 1982, as *Ophion hostilis* (Gravenhorst, 1829)).

Barycnemis guttulator (Thunberg, 1822)

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995); EMR (Roberti et al. 1965, as *Porizon guttulator* (Thunberg, 1822)).

Barycnemis harpura (Schrank, 1802)

Distribution: Nearctic; Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: North Italy (Horstmann 1981, Scaramozzino 1995); TAA (Pagliano 2009); PIE (Pagliano 2009); LIG (Pagliano 2009); EMR (Zangheri 1969, as *Leptopygus harpurus* (Schrank, 1802)); SIC (De Stefani 1895, as *Porizon harpurus* (Schrank, 1802)).

Barycnemis punctifrons Horstmann, 1981

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995).

Genus *Diaparsis* Förster, 1869

Subgenus *Diaparsis* Förster, 1869

Diaparsis (*Diaparsis*) *basalis* Horstmann, 1981

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995).

Diaparsis (*Diaparsis*) *carinifer* (Thomson, 1889)

Distribution: Nearctic; Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: North Italy (Horstmann 1971, Scaramozzino 1995); PIE (Pagliano 2009); EMR (Venturi 1942, as *Thersilochus* [sic] *moderator*); TOS (Venturi 1942, as *Thersilochus* [sic] *moderator*); LAZ (Dysart et al. 1973); SAR (Horstmann 1971, Scaramozzino 1995).

Notes: Venturi (1942) reports *Thersilochus* [sic] *moderator* (Linnaeus, 1758) as a parasite of "*Lema melanopa*" (= *Oulema melanopus* (Linnaeus, 1758)) (Coleoptera, Chrysomelidae). According to Dysart et al. (1973), whose opinion we follow here, the species reported by Venturi (1942) is *Diaparsis carinifer* (Thomson, 1889). Venturi (1942) himself noted the oddity of obtaining the parasitoid from a chrysomelid, whereas the records for the species were all from weevils (Curculionidae). It is clear that the author applied an incorrect name ("*moderator*") to the specimens obtained from *Oulema*, comparing then his results with the host records known for *Porizon moderator* known at that time. Venturi (1942) does not specify the localities of his records, but his research was carried out in Tuscany and Emilia-Romagna. We assume, therefore, that the parasitoid may be present in these two administrative regions.

Diaparsis (*Diaparsis*) *jucunda* (Holmgren, 1860)

Material

a. country: Italy; countryCode: IT; stateProvince: Latium [LAZ]; municipality: Roma; locality: Albano; year: 1986; month: 6; day: 10; verbatimEventDate: 10.vi.1986; individualCount: 1; sex: male; recordedBy: G. G. M. Schulten; identifiedBy: A. Khalaim; institutionCode: RMNH; occurrenceID: 504D5A36-5470-5767-8F0E-A3ED4F2D5177

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: LOM (Haye and Kenis 2004); PIE (Haye and Kenis 2004); LAZ (**new record**).

Notes: The specimen from Latium marks the first record for **South Italy**.

Diaparsis (*Diaparsis*) *multiplicator* Aubert, 1969

Materials

a. country: Italy; countryCode: IT; stateProvince: Lombardy [LOM]; municipality: Mantova; locality: Marmirolo, Bosco della Fontana; verbatimElevation: 25 m; samplingProtocol: Malaise trap on canopy (16 m); year: 2008; month: 4-5; day: 29-13; verbatimEventDate: 29.iv–13.v.2008; individualCount: 4; sex: 3 females, 1 male; recordedBy: M. Bardiani et al.; identifiedBy: A. Khalaim; institutionCode: FDGC; occurrenceID: CB937AD1-3F2E-5B6F-A612-5DC7A57658BA

b. country: Italy; countryCode: IT; stateProvince: Abruzzo [ABR]; municipality: L'Aquila; locality: Santo Stefano; year: 2008; month: 5; day: 24; verbatimEventDate: 24.v.2008; individualCount: 1; sex: female; recordedBy: G. Lo Giudice; identifiedBy: A. Khalaim; institutionCode: FDGC; occurrenceID: E0DAD673-DA41-5773-ABD1-D40C1D1DD608

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995); LOM (**new record**); PIE (Pagliano 2009); South Italy (Scaramozzino 1995); ABR (**new record**); BAS (Pagliano 2009).

Diaparsis (*Diaparsis*) *nutritor* (Fabricius, 1804)

Materials

a. country: Italy; countryCode: IT; stateProvince: Lombardy [LOM]; municipality: Mantova; locality: Marmirolo, Bosco della Fontana; verbatimElevation: 25 m; samplingProtocol: Malaise trap (ground); year: 2008; month: 5-6; day: 27-10; verbatimEventDate: 27.v–10.vi.2008; individualCount: 1; sex: male; recordedBy: M. Bardiani; D. Birtele; identifiedBy: A. Khalaim; institutionCode: FDGC; occurrenceID: C950398E-2224-5F02-B54F-F2BB453586A4

b. country: Italy; countryCode: IT; municipality: Mantova; locality: Marmirolo, Bosco della Fontana; verbatimElevation: 25 m; samplingProtocol: Malaise trap (ground); year: 2008; month: 6; day: 10-24; verbatimEventDate: 10–24.vi.2008; individualCount: 1; sex: female; recordedBy: M. Bardiani; D. Birtele; institutionCode: FDGC; occurrenceID: A90D68D4-69DC-53D5-86B4-99A9476DCDE3

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: LOM (**new record**); PIE (Frilli and Horstmann 1982, as *Ophion nutritor* Fabricius, 1804).

Diaparsis (*Diaparsis*) *rara* Horstmann, 1971

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995, as *Diaparsis* (*Pseudaneuclis*) *rara* Horstmann, 1971).

Diaparsis (*Diaparsis*) *temporalis* Horstmann, 1979

Materials

a. country: Italy; countryCode: IT; stateProvince: Tuscany [TOS]; municipality: Siena; locality: Pienza; samplingProtocol: Yellow pan trap; year: 2012; month: 4; day: 17-18; verbatimEventDate: 17–18.iv.2012; individualCount: 1; sex: female; recordedBy: D. Inclán; identifiedBy: A. Khalaim; institutionCode: FDGC; occurrenceID: D9AD7A44-8705-5C44-A18C-21D840859850

b. country: Italy; countryCode: IT; stateProvince: Apulia [PUG]; municipality: Foggia; locality: Emmaus; verbatimCoordinates: 41°28'15" N, 15°27'52"E; verbatimLatitude: 41°28'15" N; verbatimLongitude: 15°27'52"W; decimalLatitude: 41.470833; decimalLongitude: 15.464444; geodeticDatum: WGS84; year: 2016; month: 4; day: 30; verbatimEventDate: 30.iv.2016; individualCount: 2; sex: 1 female, 1 male; recordedBy: F. Di Giovanni leg; identifiedBy: A. Khalaim; institutionCode: FDGC; occurrenceID: 9A4490A5-0CF8-5C75-8839-E3217C6C3979

Distribution: Nearctic; Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995); PIE (Pagliano 2009); South Italy (Horstmann 1979, Horstmann 1981, Scaramozzino 1995); TOS (**new record**); PUG (**new record**).

Subgenus *Ischnobatis* Förster, 1869

Diaparsis (*Ischnobatis*) *stramineipes* (Brischke, 1880)

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: EMR (Zangheri 1969, as *Thersilochus* [sic] *rufiventris* Brischke, 1880).

Subgenus *Nanodiaparsis* Horstmann, 1971

Diaparsis (*Nanodiaparsis*) *aperta* (Thomson, 1889)

Materials

a. country: Italy; countryCode: IT; stateProvince: Lombardy [LOM]; municipality: Mantova; locality: Marmirolo, Bosco della Fontana; verbatimElevation: 25 m; samplingProtocol: Malaise trap on canopy (17 m); year: 2008; month: 6-7; day: 26-8; verbatimEventDate:

26.vi–8.vii.2008; individualCount: 1; sex: female; recordedBy: M. Bardiani; D. Birtele; identifiedBy: A. Khalaim; institutionCode: FDGC; occurrenceID: C089C24B-2E05-5288-8DD1-6744EABF730E

b. country: Italy; countryCode: IT; stateProvince: Apulia [PUG]; municipality: Foggia; locality: Emmaus; verbatimCoordinates: 41°28'15" N, 15°27'52"E; verbatimLatitude: 41°28'15" N; verbatimLongitude: 15°27'52"E; decimalLatitude: 41.470833; decimalLongitude: 15.464444; geodeticDatum: WGS84; year: 2016; month: 4; day: 30; verbatimEventDate: 30.iv.2016; habitat: on *Sinapis* sp.; individualCount: 14; sex: 2 females, 12 males; recordedBy: F. Di Giovanni; identifiedBy: A. Khalaim; institutionCode: FDGC; occurrenceID: FE0632FD-6F80-5256-9045-847A6E294DC4

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: LOM (**new record**); PUG (**new record**).

Notes: The specimens from Lombardy and Apulia mark the first records of this species for **Italy** (Fig. 2).

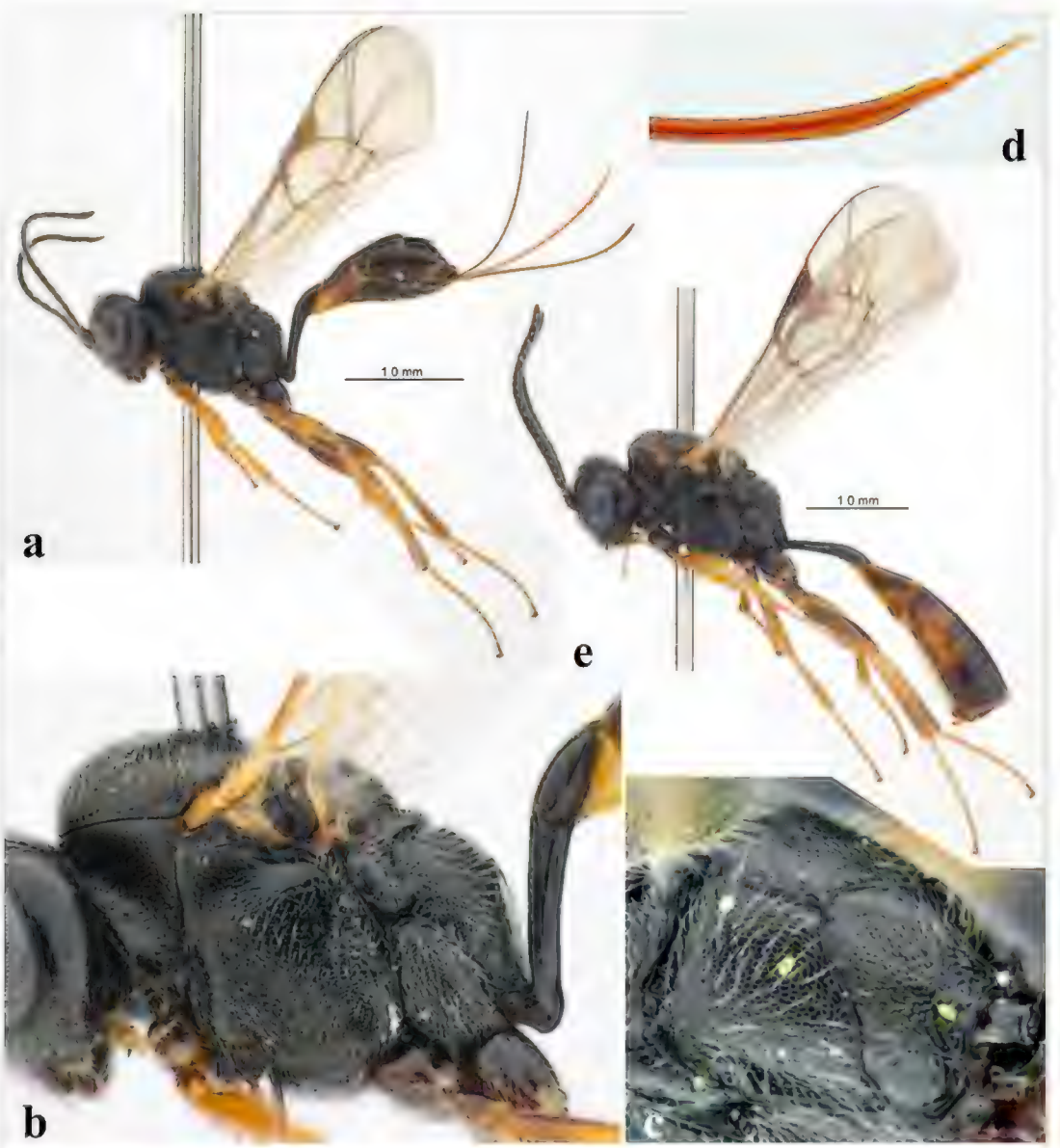

Figure 2. doi

Diaparsis (*Nanodiaparsis*) *aperta* (Thomson, 1889); **a-d**: female (Italy); **a** habitus, lateral view; **b** mesosoma and base of metasoma, lateral view; **c** propodeum, dorso-lateral view; **d** apex of ovipositor, lateral view; **e** male (Italy), habitus, lateral view.

Genus *Epistathmus* Förster, 1869

Epistathmus crassicornis Horstmann, 1971

Material

a. country: Italy; countryCode: IT; stateProvince: Lombardy [LOM]; municipality: Como; locality: Lanzo d'Intelvi; verbatimElevation: 700 m; year: 1982; month: 8; day: 10; verbatimEventDate: 10.viii.1982; habitat: meadow; individualCount: 1; sex: male; recordedBy: C. van Achterberg; identifiedBy: A. Khalaim; institutionCode: RMNH; occurrenceID: 8DC86F7C-8963-5271-AA6D-170EFA726099

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995); TAA (Horstmann 1971, Khalaim 2016, Khalaim 2019); LOM (**new record**).

Genus *Gelanes* Horstmann, 1981

Gelanes fusculus (Holmgren, 1860)

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: TAA (Khalaim and Blank 2011).

Genus *Heterocola* Förster, 1869

Subgenus *Heterocola* Förster, 1869

Heterocola (*Heterocola*) *proboscidalis* (Thomson, 1889)

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995); TAA (Horstmann 1971); EMR (Zangheri 1969).

Subgenus *Heterocoloides* Horstmann, 1971

Heterocola (*Heterocoloides*) *linguaria* (Haliday, 1838)

Material

a. country: Italy; countryCode: IT; stateProvince: Abruzzo [ABR]; municipality: L'Aquila; locality: Opi; verbatimElevation: 1100 m; year: 1993; month: 6; day: 13; verbatimEventDate: 13.vi.1993; individualCount: 1; sex: female; recordedBy: M.J. Gijswijt;

identifiedBy: A. Khalaim; institutionCode: RMNH; occurrenceID: 021AC6F4-63EB-5718-AF3B-173141B73E97

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: North Italy (Horstmann 1971, as *Heterocola* (*Heterocoloides*) *punctulata* (Szépligeti, 1899); Scaramozzino 1995, as *Heterocola* (*Heterocoloides*) *punctulata* (Szépligeti, 1899)); EMR (Zangheri 1969, as *Heterocola punctulata* (Szépligeti, 1899)); South Italy (Scaramozzino 1995, as *Heterocola* (*Heterocola*) *linguaris* [sic] (Haliday, 1838)); ABR (**new record**).

Genus *Palpator* Khalaim, 2006

Palpator sicilicus Khalaim, 2006

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: SIC (Khalaim 2006).

Notes: So far, the species is only known from Sicily. The description is in Khalaim (2006).

Genus *Phradis* Förster, 1869

Phradis brevicornis Horstmann, 1971

Distribution: Palaearctic (Eastern Palaearctic; Western Pelearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995); VEN (Khalaim et al. 2009); TAA (Horstmann 1971, Khalaim et al. 2009).

Phradis brevis (Brischke, 1880)

Distribution: Palaearctic (Eastern Pelearctic; Western Palaearctic).

Asserted distribution in Italy: North Italy (Horstmann 1971, Scaramozzino 1995); PIE (Pagliano 2009).

Phradis interstitialis (Thomson, 1889)

Material

a. country: Italy; countryCode: IT; stateProvince: Lombardy [LOM]; municipality: Cuneo; locality: Parco Naturale delle Alpi Marittime, Trinità, Ponte del Suffiet; verbatimElevation: 1192 m; verbatimCoordinates: 44°11'427" N, 07°26'264"E; verbatimLatitude: N 44°11'427" N; verbatimLongitude: 07°26'264"E; decimalLatitude: 44.195194; decimalLongitude: 7.457333; geodeticDatum: WGS84; samplingProtocol: Malaise trap;

year: 2008; month: 6; day: 10-24; verbatimEventDate: 10–24.vi.2008; habitat: near rivulet, edge of wet forest; individualCount: 1; sex: female; recordedBy: C. van Achterberg; R. de Vries; identifiedBy: A. Khalaim; institutionID: RMNH; occurrenceID: 0C1F9EE3-E512-5F5D-B2A1-0F0F120E73D5

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: LOM (Khalaim et al. 2009; **new record**); EMR (Zangheri 1969, as *Isurgus interstitialis* (Thomson, 1889)); BAS (Khalaim et al. 2009).

Phradis minutus (Bridgman, 1889)

Material

a. country: Italy; countryCode: IT; stateProvince: Tuscany [TOS]; municipality: Siena; locality: San Giovani d'Asso; samplingProtocol: Yellow pan trap; year: 2012; month: 4; day: 17-18; verbatimEventDate: 17–18.iv.2012; individualCount: 1; sex: female; recordedBy: D. Inclán; identifiedBy: A. Khalaim; institutionCode: FDGC; occurrenceID: 201B084D-28B3-52EA-9DDB-089D80E1A3B2

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: North Italy (Horstmann 1971, Scaramozzino 1995); VEN (Khalaim et al. 2009); TAA (Khalaim et al. 2009); TOS (**new record**).

Notes: The specimen from Tuscany marks the first record for **South Italy**.

Phradis monticola Szépligeti, 1899

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995); TAA (Horstmann 1971, Khalaim et al. 2009).

Phradis morionellus (Holmgren, 1860)

Materials

a. country: Italy; countryCode: IT; stateProvince: Tuscany [TOS]; municipality: Siena; locality: Asciano; samplingProtocol: Yellow pan trap; year: 2012; month: 10; day: 2-5; verbatimEventDate: 02–05.x.2012; individualCount: 1; sex: female; recordedBy: D. Inclán; identifiedBy: A. Khalaim; institutionCode: FDGC; occurrenceID: 46E6C618-F875-5C65-98FD-7CF8CA800C6D
b. country: Italy; countryCode: IT; stateProvince: Tuscany [TOS]; county: Siena; municipality: Asciano; samplingProtocol: Yellow pan trap; year: 2012; month: 3-4; day: 31-1; verbatimEventDate: 31.iii–01.iv.2012; individualCount: 1; sex: female; recordedBy: D. Inclán; identifiedBy: A. Khalaim; institutionCode: FDGC; occurrenceID: BE1219E3-3181-5D3A-9ADD-34A815252BC2
c. country: Italy; countryCode: IT; stateProvince: Tuscany [TOS]; municipality: Siena; locality: Vescona Chiesa; samplingProtocol: Yellow pan trap; year: 2012; month: 3-4; day: 31-1;

verbatimEventDate: 31.iii–01.iv.2012; individualCount: 1; sex: female; recordedBy: D. Inclán; identifiedBy: A. Khalaim; institutionCode: FDGC; occurrenceID: 79514705-8DCB-504C-A1CD-4AA50380804A

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: EMR (Zangheri 1969, as *Isurgus lanceolatus* Szépligeti, 1899); TOS (**new record**).

Notes: The specimens from Tuscany mark the first record for **South Italy**.

Phradis nigritulus (Gravenhorst, 1829)

Materials

a. country: Italy; countryCode: IT; stateProvince: Piedmont [PIE]; municipality: Cuneo; locality: Parco Naturale delle Alpi Marittime, Valdieri; verbatimElevation: 933 m; verbatimCoordinates: N 44°16'358", E 07°24'048"; verbatimLatitude: 44°16'358" N; verbatimLongitude: 07°24'048" E; decimalLatitude: 44.276611; decimalLongitude: 7.401333; geodeticDatum: WGS84; samplingProtocol: Malaise trap; year: 2008; month: 6; day: 10-24; verbatimEventDate: 10–24.vi.2008; habitat: on *Juniperus phoniceae*, on S rock slope; individualCount: 1; sex: female; recordedBy: C. van Achterberg; R. de Vries; identifiedBy: A. Khalaim; institutionCode: RMNH; occurrenceID: 8E0B06E7-53C6-588B-B71C-A25B67150E31

b. country: Italy; countryCode: IT; stateProvince: Piedmont [PIE]; municipality: Cuneo; locality: Parco Naturale delle Alpi Marittime, Valdieri; verbatimElevation: 933 m; verbatimCoordinates: N 44°16'336", E 07°24'127"; verbatimLatitude: 44°16'336" N; verbatimLongitude: 07°24'127" E; decimalLatitude: 44.276000; decimalLongitude: 7.403528; geodeticDatum: WGS84; year: 2008; month: 6; day: 10-24; verbatimEventDate: 10–24.vi.2008; habitat: on *Juniperus phoniceae*, on SE rock slope; individualCount: 2; sex: females; recordedBy: C. van Achterberg; R. de Vries; identifiedBy: A. Khalaim; institutionCode: RMNH; occurrenceID: A40C73A6-0B50-5DD3-9907-5D7CC64F2E90

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: TAA (Khalaim et al. 2009); PIE (**new record**); SIC (Horstmann 1981, Scaramozzino 1995, Khalaim et al. 2009).

Phradis punctipleuris Horstmann, 1971

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995); TAA (Khalaim et al. 2009).

Phradis thyridialis Horstmann, 1981

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: VEN (Khalaim et al. 2009); LOM (Khalaim et al. 2009).

Phradis terebrator Horstmann, 1981

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995).

Phradis toreador Aubert, 1986

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: Italy (Scaramozzino 1995); PIE (Aubert 1986).

Genus *Phrudus* Förster, 1869

Phrudus badensis Hilpert, 1987

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995); PIE (Vikberg and Koponen 2000, Pagliano 2009).

Phrudus monilicornis (Bridgman, 1886)

Distribution: Indomalayan; Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: VEN (Vikberg and Koponen 2000); TAA (Vikberg and Koponen 2000).

Genus *Probles* Förster, 1869

Subgenus *Euporizon* Horstmann, 1971

Probles (*Euporizon*) *brevicauda* Horstmann, 1981

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995, sub *Probles* (*Microdiaparsis*) *versutus* (Holmgren, 1860)).

Notes: The species was listed in Scaramozzino (1995) as a form of *Probles versutus* (Holmgren, 1860). Indeed, Scaramozzino (1995) reports that some of the records of *P. versutus* from northern Italy has to be referred to the *brevicauda* "form" of Horstmann, 1971. See also notes under *Probles* (*Microdiaparsis*) *versutus* (Holmgren, 1860).

Probles (*Euporizon*) *exilis* (Holmgren, 1860)

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995); PIE (Pagliano 2009).

Probles (*Euporizon*) *extensor* (Aubert, 1971)

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995); PIE (Pagliano 2009); LIG (Pagliano 2009).

Probles (*Euporizon*) *gilvipes* (Gravenhorst, 1829)

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: EMR (Zangheri 1969, as *Diaparsis pallipes* (Holmgren, 1860)).

Probles (*Euporizon*) *montanus* Horstmann, 1971

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: North Italy (Horstmann 1971, Scaramozzino 1995); PIE (Pagliano 2009); LIG (Pagliano 2009).

Probles (*Euporizon*) *nigriventris* Horstmann, 1971

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: North Italy (Horstmann 1971, Scaramozzino 1995); PIE (Pagliano 2009).

Probles (*Euporizon*) *rufipes* (Holmgren, 1860)

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: North Italy (Horstmann 1971, Scaramozzino 1995).

Probles (*Euporizon*) *tenuicornis* Horstmann, 1981

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995); PIE (Pagliano 2009).

Probles (*Euporizon*) *truncorum* (Holmgren, 1860)

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995); TAA (Horstmann 1971).

Subgenus *Microdiaparsis* Horstmann, 1971

Probles (*Microdiaparsis*) *caudiculatus* Khalaim, 2007

Material

a. country: Italy; countryCode: IT; stateProvince: Piedmont [PIE]; municipality: Cuneo; locality: Parco Naturale delle Alpi Marittime, near Palanfré; verbatimElevation: 1488 m; verbatimCoordinates: N 44°11'395", E 07°29'364"; verbatimLatitude: 44°11'395" N; verbatimLongitude: 07°29'364" E; decimalLatitude: 44.194306; decimalLongitude: 7.493444; geodeticDatum: WGS84; samplingProtocol: Malaise trap; year: 2008; month: 6; day: 11-2; verbatimEventDate: 11–24.vi.2008; habitat: meadow, edge of forest; recordedBy: C. van Achterberg; R. de Vries; identifiedBy: A. Khalaim; institutionCode: RMNH; occurrenceID: 9964909B-C673-54CA-93AE-9F5E1BB97D2A

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: VEN (Khalaim 2007); TAA (Khalaim 2007); PIE (Khalaim 2007; **new record**).

Probles (*Microdiaparsis*) *microcephalus* (Gravenhorst, 1829)

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: North Italy (Horstmann 1971, as *Microdiaparsis microcephalus* (Gravenhorst, 1829); *Scaramozzino 1995*); PIE (Pagliano 2009); EMR (Zangheri 1969, as *Thersilochus* [sic] *quercetorum* Szépligeti, 1899); SIC (De Stefani 1895, as *Porizon microcephalus* Gravenhorst, 1829).

Probles (*Microdiaparsis*) *neoversutus* (Horstmann, 1967)

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995); PIE (Pagliano 2009).

Probles (*Microdiaparsis*) *versutus* (Holmgren, 1860)

Materials

a. country: Italy; countryCode: IT; stateProvince: Trentino-Alto Adige [TAA], South Tyrol; municipality: Bolzano; locality: St. Peter/Ahrntal; verbatimElevation: 1300 m; year: 1967;

month: 8; day: 2; verbatimEventDate: 25.viii.1967; individualCount: 1; sex: female; recordedBy: E. Haeselbarth; identifiedBy: A. Khalaim; institutionCode: ZISP; occurrenceID: F473B5D5-6141-5FDD-9E1D-7A75E23A397A

b. country: Italy; countryCode: IT; stateProvince: Emilia-Romagna [EMR]; municipality: Bologna; locality: Sasso Marconi, Palazzo Rossi; year: 2010; month: 2-3; verbatimEventDate: ii–iii.2010; individualCount: 1; sex: female; recordedBy: L. Colacurcio; identifiedBy: A. Khalaim; institutionCode: FDGC; occurrenceID: 8B7704E1-CCA5-59A4-9701-FCBF1CE5A6EB

c. country: Italy; countryCode: IT; stateProvince: Emilia-Romagna [EMR]; municipality: Bologna; locality: Sasso Marconi, Palazzo Rossi; year: 2010; month: 3; verbatimEventDate: 08.iii.2010; individualCount: 1; sex: male; recordedBy: L. Colacurcio; identifiedBy: A. Khalaim; institutionCode: FDGC; occurrenceID: 5BB7D66B-BCB8-509A-BE91-871AB844DA01

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995); TAA (Horstmann 1971, as *Microdiaparsis versutus* (Holmgren, 1860); **new record**); PIE (Pagliano 2009); EMR (Zangheri 1969, as *Diaparsis versutus* (Holmgren 1860); **new record**).

Notes: The data reported by Scaramozzino (1995) for this species partly include those for *Probles* (*Euporizon*) *brevicauda* Horstmann, 1981, which Scaramozzino (1995) listed as a form of *P. versutus* (Holmgren, 1860).

Subgenus *Probles* Förster, 1869

Probles (*Probles*) *brevivalvis* Horstmann, 1971

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995); TAA (Horstmann 1971, Khalaim 2016, Khalaim 2019).

Probles (*Probles*) *erythrostomus* (Gravenhorst, 1829)

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: North Italy (Horstmann 1971, Scaramozzino 1995); PIE (Gravenhorst 1829, as *Porizon minator* Gravenhorst, 1829); LIG (Gravenhorst 1829, as *Porizon minator* Gravenhorst, 1829); South Italy (Horstmann 1971, Scaramozzino 1995).

Notes: Horstmann (1979) recorded this species from central Italy, which is treated as South Italy according to the division into geographical subregions proposed by Minelli et al. (1993-1995).

Probles (*Probles*) *flavipes* (Szépligeti, 1899)

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995); TAA (Horstmann 1971).

Subgenus *Rugodiaparsis* Horstmann, 1971

Probles (*Rugodiaparsis*) *crassipes* (Thomson, 1889)

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: North Italy (Horstmann 1981, Scaramozzino 1995); PIE (Pagliano 2009).

Probles (*Rugodiaparsis*) *ruficornis* (Szépligeti, 1899)

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995); PIE (Pagliano 2009).

Subgenus *Rhynchoprobles* Horstmann, 1971

Probles (*Rhynchoprobles*) *longisetosus* (Hedwig, 1956)

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995); TAA (Horstmann 1971).

Genus *Tersilochus* Holmgren, 1859

Subgenus *Gonolochus* Förster, 1869

Tersilochus (*Gonolochus*) *caudatus* (Holmgren, 1860)

Materials

a. country: Italy; countryCode: IT; stateProvince: Trentino-Alto Adige [TAA]; municipality: Trento; locality: San Rocco; samplingProtocol: Malaise trap; year: 1994; month: 4-5; day: 21-18; verbatimEventDate: 21.iv–18.v.1994; individualCount: 3; sex: 2 females, 1 male; recordedBy: L. Blommers; identifiedBy: A. Khalaim; institutionCode: RMNH; occurrenceID: 8EEFCB13-1F38-5365-A0DA-96868A98006F

b. country: Italy; countryCode: IT; stateProvince: Piedmont [PIE]; municipality: Cuneo; locality: Parco Naturale delle Alpi Marittime, near Palanfré; verbatimElevation: 1488 m;

verbatimCoordinates: N 44°11'395'', E 7°29'364''; verbatimLatitude: 44°11'395'' N; verbatimLongitude: 7°29'364'' E; decimalLatitude: 44.194306; decimalLongitude: 7.493444; geodeticDatum: WGS84; samplingProtocol: Malaise trap; year: 2008; month: 6; day: 11-24; verbatimEventDate: 11–24.vi.2008; habitat: meadow, edge of forest; recordedBy: C. van Achterberg; R. de Vries; identifiedBy: A. Khalaim; institutionCode: RMNH; occurrenceID: 0A576653-D328-5660-A56C-8AE61DF8433F

c. country: Italy; countryCode: IT; stateProvince: Piedmont [PIE]; municipality: Cuneo; locality: Parco Naturale delle Alpi Marittime, Trinità, Ponte del Suffiet; verbatimElevation: 1192 m; verbatimCoordinates: N 44°11'427'', E 7°26'264''; verbatimLatitude: 44°11'427'' N; verbatimLongitude: 7°26'264''E; decimalLatitude: 44.195194; decimalLongitude: 7.440667; geodeticDatum: WGS84; samplingProtocol: Malaise trap; year: 2008; month: 6; day: 10-24; verbatimEventDate: 10–24.vi.2008; habitat: near rivulet, edge of wet forest; individualCount: 1; sex: female; recordedBy: C. van Achterberg; R. de Vries; identifiedBy: A. Khalaim; institutionCode: RMNH; occurrenceID: 63021316-9138-5FD8-A4AA-C6EBA8B462EA

d. country: Italy; countryCode: IT; stateProvince: Piedmont [PIE]; municipality: Cuneo; locality: Parco Naturale delle Alpi Marittime, Trinità, Gias d'Ischietto; verbatimElevation: 1323 m; verbatimCoordinates: N 44°10'317", E 07°27'348"; verbatimLatitude: 44°10'317" N; verbatimLongitude: 07°27'348" E; decimalLatitude: 44.175472; decimalLongitude: 7.459667; geodeticDatum: WGS84; samplingProtocol: Malaise trap; year: 2008; month: 6; day: 13-24; verbatimEventDate: 13–24.vi.2008; habitat: near rivulet, ruderal forest meadow; individualCount: 1; sex: female; recordedBy: C. van Achterberg; R. de Vries; identifiedBy: A. Khalaim; institutionCode: RMNH; occurrenceID: 3BC544D9-F3A0-580D-A04F-34D2744BC15D

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: North Italy (Horstmann 1971, as *Gonolochus caudatus* (Holmgren, 1860); *Scaramozzino 1995*); TAA (**new record**); PIE (Pagliano 2009, Khalaim 2016, Khalaim 2019; **new record**); EMR (Roberti et al. 1965; Zangheri 1969, as *Thersilocus* [sic] *caudatus* (Holmgren, 1860)).

Tersilochus (*Gonolochus*) *rugulosus* Horstmann, 1981

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: South Italy (Scaramozzino 1995); LAZ (Horstmann 1981).

Subgenus *Pectinolochus* Aubert, 1960

Tersilochus (*Pectinolochus*) *coeliodicola* Silvestri, 1917

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: South Italy (Horstmann 1971, Scaramozzino 1995); CAM (Silvestri 1917, as *Thersilochus* [sic] *coeliodicola* Silvestri, 1917).

Tersilochus (*Pectinolochus*) *striola* (Thomson, 1889)

Distribution: Nearctic; Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995); PIE (Pagliano 2009).

Tersilochus (*Pectinolochus*) *terebrator* (Horstmann, 1971)

Material

a. country: Italy; countryCode: IT; stateProvince: Piedmont [PIE]; municipality: Cuneo; locality: Parco Naturale delle Alpi Marittime, Trinità, Ponte del Suffiet; verbatimElevation: 1170 m; verbatimCoordinates: N 44°11'553", E 07°26'192"; verbatimLatitude: 44°11'553" N; verbatimLongitude: 07°26'192" E; decimalLatitude: 44.198694; decimalLongitude: 7.438667; geodeticDatum: WGS84; samplingProtocol: Malaise trap; year: 2008; month: 6; day: 10-24; verbatimEventDate: 10–24.vi.2008; habitat: near rivulet, edge of wet forest; individualCount: 1; sex: female; recordedBy: C. van Achterberg; R. de Vries; identifiedBy: A. Khalaim; institutionCode: RMNH; occurrenceID: E7793537-7F97-5C56-A716-98CDF0A1B1D2

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: PIE (**new record**).

Notes: The specimen from Piedmont marks the first record of this species for **Italy** (Fig. 3).

Figure 3. doi

Tersilochus (*Pectinolochus*) *terebrator* (Horstmann, 1971), female (Italy); **a** habitus, lateral view; **b** ovipositor, lateral view.

Subgenus *Tersilochus* Holmgren, 1859

Tersilochus (*Tersilochus*) *brevissimus* Horstmann, 1981

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995); TAA (Horstmann 1981).

Tersilochus (*Tersilochus*) *cognatus* (Holmgren, 1860)

Materials

a. country: Italy; countryCode: IT; stateProvince: Trentino-Alto Adige [TAA]; municipality: Trento; locality: San Rocco; samplingProtocol: Malaise trap; year: 1994; month: 4-5; day: 21-11; verbatimEventDate: 21.iv–11.v.1994; individualCount: 9; sex: 6 females, 3 males; recordedBy: L. Blommers; identifiedBy: A. Khalaim; institutionCode: RMNH; occurrenceID: 54049FC8-2603-5F57-A50E-6F1FADB802F7

b. country: Italy; countryCode: IT; stateProvince: Piedmont [PIE]; municipality: Cuneo; locality: Parco Naturale delle Alpi Marittime, Trinità, Ponte del Suffiet,; verbatimElevation: 1170 m; verbatimCoordinates: N 44°11'553'', E 7°26'192''; verbatimLatitude: 44°11'553'' N; verbatimLongitude: 7°26'192'' E; decimalLatitude: 44.198694; decimalLongitude: 7.438667; geodeticDatum: WGS84; samplingProtocol: Malaise trap; year: 2008; month: 6; day: 10-24; verbatimEventDate: 10–24.vi.2008; habitat: near rivulet, edge of wet forest; individualCount: 1; sex: female; recordedBy: C. van Achterberg; R. de Vries; identifiedBy: A. Khalaim; institutionCode: RMNH; occurrenceID: 088DABF4-18B5-5F67-9B74-1F7BB35EEF1D

c. country: Italy; countryCode: IT; stateProvince: Piedmont [PIE]; municipality: Cuneo; locality: Parco Naturale delle Alpi Marittime, Trinità, Gias d'Ischietto; verbatimElevation: 1323 m; verbatimCoordinates: N 44°10'317", E 07°27'348"; verbatimLatitude: 44°10'317" N; verbatimLongitude: 07°27'348" E; decimalLatitude: 44.175472; decimalLongitude: 7.459667; geodeticDatum: WGS84; samplingProtocol: Malaise trap; year: 2008; month: 6; day: 13-24; verbatimEventDate: 13–24.vi.2008; habitat: near rivulet, ruderal forest meadow; individualCount: 1; sex: female; recordedBy: C. van Achterberg; R. de Vries; identifiedBy: A. Khalaim; institutionCode: RMNH; occurrenceID: 2A72B432-4F86-5943-AFE9-83CCAA259F15

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: North Italy (Horstmann 1981, as *Tersilochus jocator* Holmgren, 1859; Scaramozzino 1995, as *Tersilochus jocator* Holmgren, 1859); TAA (**new record**); PIE (Pagliano 2009, as *Tersilochus jocator* Holmgren, 1859; **new record**); EMR (Zangheri 1969, as *Thersilochus* [sic] *jocator* Holmgren, 1859); South Italy (Scaramozzino 1995, as *Tersilochus jocator* Holmgren, 1859); ABR (Pagliano 2009, as *Tersilochus jocator* Holmgren, 1859).

Notes: Holmgren (1859) mentioned the name "*Tersilochus (Porizon) locator* Grav." as the type species for the genus *Tersilochus*. However, Gravenhorst (1829) did not describe a new species with this name, but mentioned the *Ichneumon jocator* of

Fabricius (1793). As already delineated by Horstmann (1969), *Ichneumon jocator* Fabricius, 1793 is actually an *Eriborus* (Campopleginae) and is currently a synonym of *Eriborus braccatus* (Gmelin, 1790) (Aubert 1971, Horstmann 2001). As reported by Horstmann (2005), Gravenhorst (1829) misidentified the specimen(s) he included in *Porizon jocator* Fabricius, 1793. Thus, Holmgren, following the interpretation by Gravenhorst (1829) when designating the type species for *Tersilochus*, committed an incorrect subsequent spelling. Those specimens are, in fact, *Tersilochus cognatus* (Holmgren, 1860). Horstmann (1969) wrongly interpreted Holmgren's identification as a deliberate use of an incorrect interpretation (following the 1962 version of the Code). Currently, these cases fall into Article 67.13.1 of ICZN (1999) which clearly states that "*If an author fixes as the type species of a new nominal genus or subgenus a species originally included deliberately in the sense of a misidentification or misapplication by an earlier author of a name which had been previously established [...], the type species fixed by that action is deemed to be a new nominal species [...]; for the name-bearing type of this species see [...]*". With this in mind, what Yu et al. (2016) report is unwarranted, as there is no *jocator* Holmgren, 1859 (unavailable name), because Holmgren (1859) did not deliberately include a misidentification, but simply reported what he thought to be a valid identification by Gravenhorst (1829). It was Horstmann (1969) who deliberately included a wrong identification, creating therefore an unavailable name, *Tersilochus jocator* Horstmann, 1869. This is perfectly explained in Horstmann (2005), which also reported that Holmgren (1859)'s *jocator* should be treated as a misidentification of *cognatus* Holmgren, 1860.

Tersilochus (*Tersilochus*) *curvator* Horstmann, 1981

Distribution: Palaearctic (Eastern Palaearctic; Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995, also as *Tersilochus* (*Tersilochus*) *saltator* (Fabricius, 1781)); PIE (Frilli and Horstmann 1982, as *Ophion saltator* (Fabricius, 1781); Pagliano 2009).

Notes: Frilli and Horstmann (1982) and Scaramozzino (1995) report *Tersilochus saltator* (Fabricius, 1781) for Italy. However, *T. saltator* is now considered a species within the genus *Cardiochiles* Nees, 1819 (Braconidae), as *Cardiochiles saltator*. Yu and Horstmann (1997) noticed that specimens of *T. saltator* have been misidentified in the past with *T. curvator*. Therefore, Frilli and Horstmann (1982)'s and Scaramozzino (1995)'s records are, in fact, to be associated with *T. curvator* Horstmann, 1981.

Tersilochus (*Tersilochus*) *longicaudatus* Horstmann, 1971

Material

a. country: Italy; countryCode: IT; stateProvince: Lombardy [LOM]; municipality: Mantova; locality: Marmirolo, Bosco della Fontana; verbatimElevation: 25 m; samplingProtocol: Malaise trap on canopy (15–16.5); year: 2008; month: 4; day: 1-15; verbatimEventDate:

01–15.iv.2008; individualCount: 4; sex: females; recordedBy: M. Bardiani et al.; identifiedBy: A. Khalaim; institutionCode: FDGC; occurrenceID: 054C2A40-F2BB-5148-ACF0-27C1B3305E9D

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995); LOM (**new record**); PIE (Pagliano 2009).

Tersilochus (*Tersilochus*) *microgaster* (Szépligeti, 1899)

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995); PIE (Pagliano 2009).

Tersilochus (*Tersilochus*) *obscurator* (Aubert, 1959)

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995).

Tersilochus (*Tersilochus*) *ruberi* Horstmann, 1981

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: South Italy (Scaramozzino 1995); CAM (Horstmann 1981).

Tersilochus (*Tersilochus*) *subdepressus* (Thomson, 1889)

Materials

a. country: Italy; countryCode: IT; stateProvince: Emilia-Romagna [EMR]; municipality: Bologna; locality: Casalecchio di Reno, Tizzano; year: 2010; month: 3; day: 7; verbatimEventDate: 07.iii.2010; individualCount: 1; sex: female; recordedBy: L. Colacurcio; identifiedBy: A. Khalaim; institutionCode: FDGC; occurrenceID: 780B6C24-F671-57AE-9B48-E4166CA8D943

b. country: Italy; countryCode: IT; stateProvince: Emilia-Romagna [EMR]; municipality: Bologna; locality: Sasso Marconi, Palazzo Rossi; year: 2010; month: 3; day: 8; verbatimEventDate: 08.iii.2010; individualCount: 1; sex: female; recordedBy: L. Colacurcio; identifiedBy: A. Khalaim; institutionCode: FDGC; occurrenceID: B43E955B-B251-5221-9C15-99A480FC0B7A

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: EMR (**new record**).

Notes: The specimens from Emilia-Romagna mark the first record of this species for **Italy** (Fig. 4).

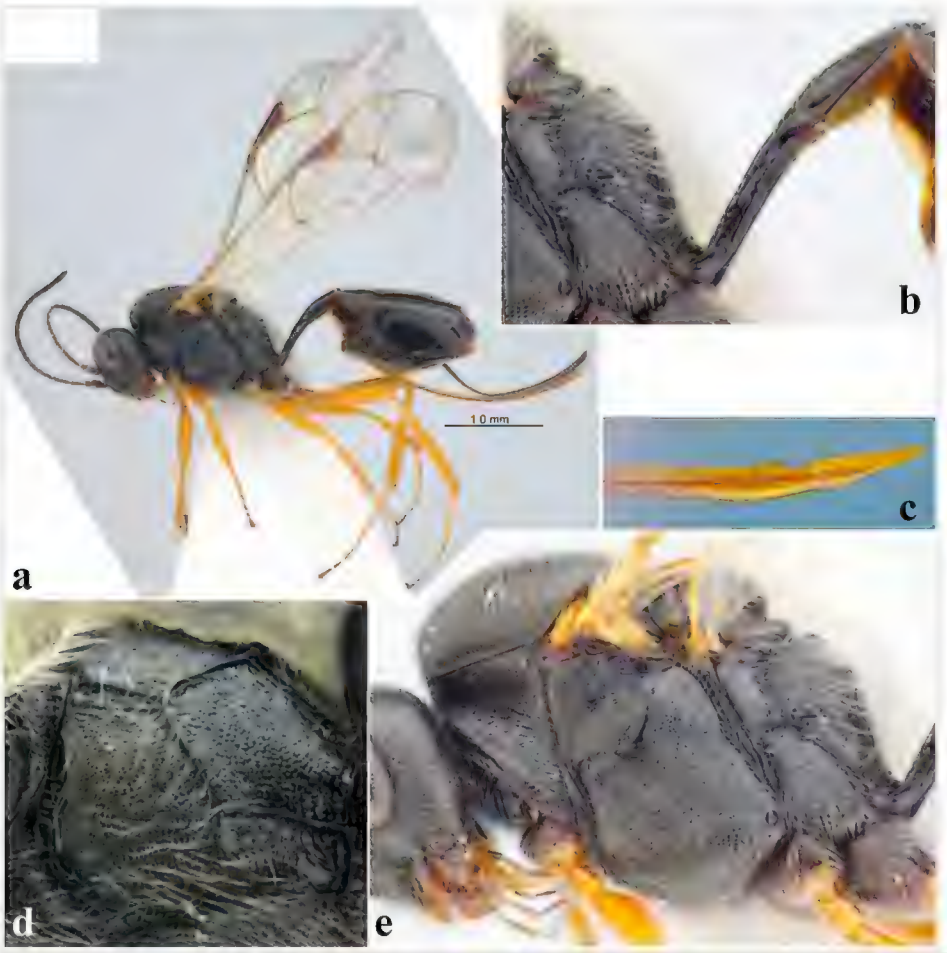

Figure 4. doi

Tersilochus (*Tersilochus*) *subdepressus* (Thomson, 1889), female (Italy); **a** habitus, lateral view; **b** posterior part of mesosoma and base of metasoma, lateral view; **c** apex of ovipositor; **d** propodeum, dorso-lateral view; **e** mesosoma, lateral view.

Tersilochus (*Tersilochus*) *triangularis* (Gravenhorst, 1807)

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: PIE (Frilli and Horstmann 1982, as *Ophion triangularis* Gravenhorst, 1807).

Tersilochus (*Tersilochus*) *tripartitus* (Brischke, 1880)

Material

a. country: Italy; countryCode: IT; stateProvince: Trentino-Alto Adige [TAA]; municipality: Trento; locality: San Rocco; samplingProtocol: Malaise trap; year: 1994; month: 5; day: 10-11; verbatimEventDate: 10–11.v.1994; individualCount: 1; sex: female; recordedBy: L. Blommers; identifiedBy: A. Khalaim; institutionCode: RMNH; occurrenceID: 439275A0-98EC-5FB2-816B-7CCFC9482B0F

Distribution: Palaearctic (Western Palaearctic).

Asserted distribution in Italy: North Italy (Scaramozzino 1995); TAA (**new record**); PIE (Pagliano 2009).

Discussion

With the present work, the Italian fauna of Tersilochinae has risen to 77 species, included in 13 genera. This represents a significant increase compared to the 1995 checklist of Italian fauna (Scaramozzino 1995) that listed only 59 species. Despite the increase, 73 out of the 77 species reported in the present work are known from northern Italy, while just 16 species have been recorded for southern regions. Only six species are known from Sicily and only one, *Diaparsis carinifer* (Thomson, 1889), has been reported for Sardinia so far. No data are yet available for five administrative regions (FVG, MAR, UMB, MOL and CAL). Overall, the current distribution data highlight significant knowledge gaps regarding this subfamily in Italy. It is clear that much of the diversity of the Darwin wasps still remains unexplored, especially in the southernmost part of the Italian peninsula and major islands, where collected data are often scarce and very old. Italy's situation is particularly challenging due to the complete absence of a centralised national natural history museum (Andreone et al. 2014). Records are scattered amongst museums, universities, public administrations and private foundations, making it extremely difficult to locate identified specimens and, therefore, corroborate previous reported records (Andreone et al. 2014). We stress the importance of checklists as a baseline for future taxonomic, faunistic and ecological studies, directing efforts towards areas that are still little investigated.

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Author contributions

Conceptualisation: AIK, DDP, FDG; Writing - original draft: AIK, DDP, FDG; Writing - review and editing: AIK, DDP, FDG; Visualisation: AIK, FDG.

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